

SEQUENCE LISTING



<110> Sano, Hiroshi
Kusano, Tomonobu
Koizumi, Nozomu

<120> Theobromine Synthase Polypeptide of Coffee Plant and the
Gene Encoding Said Polypeptide

<130> 026350-068

<140> US 09/971,020

<141> 2001-10-05

<150> JP 2000-307,149

<151> 2000-10-06

<160> 22

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<212> PRT

<213> Caffea arabica

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Pro	Phe	Leu	Glu	Gln	Cys	Ile	Arg	Glu	Leu	Leu	Arg	Ala	Asn	Leu	Pro
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Asn	Ile	Asn	Lys	Cys	Ile	Lys	Val	Ala	Asp	Leu	Gly	Cys	Ala	Ser	Gly
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Pro	Asn	Thr	Leu	Leu	Thr	Val	Arg	Asp	Ile	Val	Gln	Ser	Ile	Asp	Lys
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Phe	Leu	Asn	Asp	Leu	Phe	Gln	Asn	Asp	Phe	Asn	Ser	Val	Phe	Lys	Leu
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Ala	Asn	Lys	Gly	Ser	Ile	Tyr	Ser	Ser	Lys	Gly	Cys	Arg	Pro	Pro	Val
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Gln	Lys	Ala	Tyr	Leu	Asp	Gln	Phe	Thr	Lys	Asp	Phe	Thr	Thr	Phe	Leu
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Arg	Ile	His	Ser	Lys	Glu	Leu	Phe	Ser	Arg	Gly	Arg	Met	Leu	Leu	Thr
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Cys	Ile	Cys	Lys	Val	Asp	Glu	Phe	Asp	Glu	Pro	Asn	Pro	Leu	Asp	Leu
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TECH CENTER 1600/2900

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Glu Lys Leu Asp Ser Phe Asn Ile Pro Phe Phe Thr Pro Ser Ala Glu
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Glu Val Lys Cys Ile Val Glu Glu Glu Gly Ser Cys Glu Ile Leu Tyr
                275                280                285
Leu Glu Thr Phe Lys Ala His Tyr Asp Ala Ala Phe Ser Ile Asp Asp
                290                295                300
Asp Tyr Pro Val Arg Ser His Glu Gln Ile Lys Ala Glu Tyr Val Ala
305                310                315                320
Ser Leu Ile Arg Ser Val Tyr Glu Pro Ile Leu Ala Ser His Phe Gly
                325                330                335
Glu Ala Ile Met Pro Asp Leu Phe His Arg Leu Ala Lys His Ala Ala
                340                345                350
Lys Val Leu His Met Gly Lys Gly Cys Tyr Asn Asn Leu Ile Ile Ser
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Leu Ala Lys Lys Pro Glu Lys Ser Asp Val
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caacaagtgc attaaagttg cggatttggg atgcgcttct ggaccaaaca cacttttaac 240
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 <212> PRT
 <213> *Coffea arabica*

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20                25                30
Lys Pro Val Leu Glu Gln Cys Val Arg Glu Leu Leu Arg Ala Asn Leu

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35	40	45
Pro Asn Ile Asn Lys Cys Ile Lys Val Ala Asp Leu Gly Cys Ala Ser		
50	55	60
Gly Pro Asn Thr Leu Leu Thr Val Trp Asp Thr Val Gln Ser Ile Asp		
65	70	75
Lys Val Lys Gln Glu Met Lys Asn Glu Leu Glu Arg Pro Thr Ile Gln		
85	90	95
Val Phe Leu Thr Asp Leu Phe Gln Asn Asp Phe Asn Ser Val Phe Met		
100	105	110
Leu Leu Pro Ser Phe Tyr Arg Lys Leu Glu Lys Glu Asn Gly Arg Lys		
115	120	125
Ile Gly Ser Cys Leu Ile Ala Ala Met Pro Gly Ser Phe His Gly Arg		
130	135	140
Leu Phe Pro Glu Glu Ser Met His Phe Leu His Ser Ser Tyr Ser Leu		
145	150	155
Gln Phe Leu Ser Gln Val Pro Ser Gly Leu Val Thr Glu Leu Gly Ile		
165	170	175
Thr Ala Asn Lys Arg Ser Ile Tyr Ser Ser Lys Ala Ser Pro Pro Pro		
180	185	190
Val Gln Lys Ala Tyr Leu Asp Gln Phe Thr Lys Asp Phe Thr Thr Phe		
195	200	205
Leu Arg Met Arg Ser Glu Glu Leu Leu Ser Arg Gly Arg Met Leu Leu		
210	215	220
Thr Cys Ile Cys Lys Gly Asp Glu Cys Asp Gly Pro Asn Thr Met Asp		
225	230	235
Leu Leu Glu Met Ala Ile Asn Asp Leu Val Ala Glu Gly Arg Leu Gly		
245	250	255
Glu Glu Lys Leu Asp Ser Phe Asn Val Pro Ile Tyr Thr Ala Ser Val		
260	265	270
Glu Glu Val Lys Cys Met Val Glu Glu Glu Gly Ser Phe Glu Ile Leu		
275	280	285
Tyr Leu Gln Thr Phe Lys Leu Arg Tyr Asp Ala Gly Phe Ser Ile Asp		
290	295	300
Asp Asp Cys Gln Val Arg Ser His Ser Pro Val Tyr Ser Asp Glu His		
305	310	315
Ala Arg Ala Ala His Val Ala Ser Leu Ile Arg Ser Val Tyr Glu Pro		
325	330	335
Ile Leu Ala Ser His Phe Gly Glu Ala Ile Ile Pro Asp Ile Phe His		
340	345	350
Arg Phe Ala Thr Asn Ala Ala Lys Val Ile Arg Leu Gly Lys Gly Phe		
355	360	365
Tyr Asn Asn Leu Ile Ile Ser Leu Ala Lys Lys Pro Glu Lys Ser Asp		
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Ile		
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<211> 1360

<212> DNA

<213> Coffea arabica

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agttgcagat ttgggatgcg cttccggacc aaacacactt ttaaccgttt gggacactgt 240
acaaagtatt gacaaagtta agcaagaaat gaagaatgaa ttagaacgtc ccaccattca 300
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aatgcctggc tctttccacg gcagactctt ccccgaggag tccatgcatt ttttactc 480
ttcttacagt cttcagtttt tatcccaggt tcccagcggg ttggtgactg aattgggat 540
cactgcgaac aaaaggagca tttactcttc caaagcaagt cctccgccg tccagaaggc 600
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gctttcacgt ggccgaatgc tccttacttg catttgtaaa ggagatgaat gcgacggccc 720
gaataccatg gacttacttg agatggcaat aaacgacttg gttgctgagg gacgtctggg 780
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ttatgatgct ggcttctcta ttgatgatga ttgcccaagta agatcccatc cccaggtata 960
cagcgatgaa catgctagag cagcgcatgt ggcatcatta attagatcag tttacgaacc 1020
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gaatgcagca aaggttatcc gcttgggcaa aggtctctat aataatctta tcatttctct 1140
tgccaaaaaa ccagagaagt cagacatata aaagcttgtt ttagtttgtt ttttgtgtta 1200
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<211> 385

<212> PRT

<213> *Coffea arabica*

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35 40 45
Pro Asn Ile Asn Lys Cys Ile Lys Val Ala Asp Leu Gly Cys Ala Ser
50 55 60
Gly Pro Asn Thr Leu Leu Thr Val Arg Asp Ile Val Gln Ser Ile Asp
65 70 75 80
Asp Val Arg Gln Glu Met Lys Asn Glu Leu Glu Arg Pro Thr Ile Gln
85 90 95
Val Phe Leu Thr Asp Leu Phe Gln Asn Asp Phe Asn Ser Val Phe Met
100 105 110
Leu Leu Pro Ser Phe Tyr Arg Lys Leu Glu Lys Glu Asn Gly Arg Lys
115 120 125
Ile Gly Ser Cys Leu Ile Ala Ala Met Pro Gly Ser Phe His Gly Arg
130 135 140
Leu Phe Pro Glu Glu Ser Met His Phe Leu His Ser Ser Tyr Ser Leu
145 150 155 160
Gln Phe Leu Ser Gln Val Pro Ser Gly Leu Val Thr Glu Leu Gly Ile
165 170 175
Thr Ala Asn Lys Arg Ser Ile Tyr Ser Ser Lys Ala Ser Pro Pro Pro
180 185 190
Val Gln Lys Ala Tyr Leu Asp Gln Phe Thr Lys Asp Phe Thr Thr Phe
195 200 205
Leu Arg Ile Arg Ser Glu Glu Leu Leu Ser Arg Gly Arg Met Leu Leu
210 215 220
Thr Cys Ile Cys Lys Gly Asp Glu Phe Asp Gly Pro Asn Thr Met Asp
225 230 235 240
Leu Leu Glu Met Ala Ile Asn Asp Leu Val Val Glu Gly His Leu Glu
245 250 255
Glu Glu Lys Leu Asp Ser Phe Asn Val Pro Ile Tyr Ala Ala Ser Val
260 265 270
Glu Glu Leu Lys Cys Ile Val Glu Glu Gly Ser Phe Glu Ile Leu

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Tyr Leu Glu Thr Phe Lys Leu Arg Tyr Asp Ala Gly Phe Ser Ile Asp
 290      295      300
Asp Asp Cys Gln Val Arg Ser His Ser Pro Glu Tyr Ser Asp Glu His
 305      310      315      320
Ala Arg Ala Ala His Val Ala Ser Leu Leu Arg Ser Val Tyr Glu Pro
      325      330      335
Ile Leu Ala Asn His Phe Gly Glu Ala Ile Ile Pro Asp Ile Phe His
      340      345      350
Arg Phe Ala Thr Asn Ala Ala Lys Val Ile Arg Leu Gly Lys Gly Phe
      355      360      365
Tyr Asn Asn Leu Ile Ile Ser Leu Ala Lys Lys Pro Glu Lys Ser Asp
      370      375      380
Ile
385

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<212> DNA
<213> Coffea arabica

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gaagaatgaa ttagaacgtc ccaccattca ggtttttctg actgatcttt tccaaatga 360
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cacattttta aggattcgtt cggaagagtt gctttcacgc ggccgaatgc tccttacttg 720
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aattttgtac ttggagactt ttaagctccg ttatgatgct ggcttctcta ttgatgatga 960
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aggcttctat aataatctta tcatttctct tgccaaaaaa ccagagaagt cagacatata 1200
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<212> PRT
<213> Coffea arabica

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      20      25      30
Lys Pro Val Leu Glu Gln Cys Val Arg Glu Leu Leu Arg Ala Asn Leu
      35      40      45
Pro Asn Ile Asn Lys Cys Ile Lys Val Ala Asp Leu Gly Cys Ala Ser

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50	55	60
Gly Pro Asn Thr Leu Leu Thr Val Arg Asp Ile Val Gln Ser Ile Asp		
65	70	75
Lys Val Gly Gln Glu Lys Lys Asn Glu Leu Glu Arg Pro Thr Ile Gln		
85	90	95
Ile Phe Leu Asn Asp Leu Phe Pro Asn Asp Phe Asn Ser Val Phe Lys		
100	105	110
Leu Leu Pro Ser Phe Tyr Arg Lys Leu Glu Lys Glu Asn Gly Arg Lys		
115	120	125
Ile Gly Ser Cys Leu Ile Gly Ala Met Pro Gly Ser Phe Tyr Ser Arg		
130	135	140
Leu Phe Pro Glu Glu Ser Met His Phe Leu His Ser Cys Tyr Cys Leu		
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Gln Trp Leu Ser Gln Val Pro Ser Gly Leu Val Thr Glu Leu Gly Ile		
165	170	175
Ser Thr Asn Lys Gly Ser Ile Tyr Ser Ser Lys Ala Ser Arg Leu Pro		
180	185	190
Val Gln Lys Ala Tyr Leu Asp Gln Phe Thr Lys Asp Phe Thr Thr Phe		
195	200	205
Leu Arg Ile His Ser Glu Glu Leu Phe Ser His Gly Arg Met Leu Leu		
210	215	220
Thr Cys Ile Cys Lys Gly Val Glu Leu Asp Ala Arg Asn Ala Ile Asp		
225	230	235
Leu Leu Glu Met Ala Ile Asn Asp Leu Val Val Glu Gly His Leu Glu		
245	250	255
Glu Glu Lys Leu Asp Ser Phe Asn Leu Pro Val Tyr Ile Pro Ser Ala		
260	265	270
Glu Glu Val Lys Cys Ile Val Glu Glu Glu Gly Ser Phe Glu Ile Leu		
275	280	285
Tyr Leu Glu Thr Phe Lys Val Leu Tyr Asp Ala Gly Phe Ser Ile Asp		
290	295	300
Asp Glu His Ile Lys Ala Glu Tyr Val Ala Ser Ser Val Arg Ala Val		
305	310	315
Tyr Glu Pro Ile Leu Ala Ser His Phe Gly Glu Ala Ile Ile Pro Asp		
325	330	335
Ile Phe His Arg Phe Ala Lys His Ala Ala Lys Val Leu Pro Leu Gly		
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<212> DNA

<213> Coffea arabica

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gcatttgtaa aggagttgaa ttagacgccc ggaatgccat agacttactt gagatggcaa 780
taaacgactt ggttggtgag ggacatctgg aggaagaaaa attggatagt ttcaatcttc 840
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ttgggggtct ttcgggtatt gtgcttttta tattatattg ttttgtatcc gtaataaaaag 1260
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<213> Artificial Sequence

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<223> forward primer

<221> misc feature

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<221> misc feature

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<223> n = inosine

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<212> PRT

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